

THE
PROGRESS AND LIMITATIONS
OF
OPERATIONS UPON THE ABDOMINAL CAVITY.

BY
J. EWING MEARS, M.D.,

Lecturer on Practical Surgery in Jefferson Medical College;
Gynecologist to Jefferson Medical College Hospital;
Surgeon to St. Mary's Hospital, etc.

*Being the Annual Address delivered before the
Philadelphia Academy of Surgery, March 7, 1887.*

[Reprinted from the Philadelphia Medical Times for
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THE PROGRESS AND LIMITATIONS OF OPERATIONS UPON THE ABDOMINAL CAVITY.

THE surgeon of to-day, standing upon the borders of the abdominal cavity and peering into its recesses, is compelled, like Alexander of old, to express regret that no more organs exist within its domain which remain to be conquered by his art and be rendered subject to his knife. As he thus contemplates the fields of conquest, he is led to consider, In what manner were these grand victories achieved, —what the beginnings of this mighty invasion into this cavity, hitherto regarded as so well protected by its innermost barrier, which afforded not only protection against intrusion, but embraced within its folds the organs contained within, and still further opposed assault? what the development of the methods which have accomplished victory? and, finally, if any exist, what the limits of surgical procedures within this cavity?

To those acquainted, as no doubt you all are, with the history of the progress of surgery, it is not necessary to dwell in detail upon the beginnings of surgical operations upon the abdominal cavity. In truth, it may not be possible to fix, in ac-

curate statement, the beginning. While it is no doubt true that unpremeditated operations, resulting in the successful extirpation of organs the seat of morbid changes, established the feasibility of the successful performance of such operations, and led to further inquiry and study of proper methods, yet I believe that in the Cæsarean section we find the first premeditated attempt—a well-defined plan of operation upon the cavity carried into execution, and having in view a definite purpose,—executed under the inspiration of the noble impulse to make an effort to rescue from impending death the life, happily it may be, of two beings.

To show the great progress which has been made in the performance of this operation through the Porro-Müller modifications, it is only necessary to refer to the results which have followed in each. For one hundred years, as stated by Dr. Clement Godson, every Cæsarean section was followed by death in the Vienna hospitals. From 1787 to 1879 the same results followed in the Maternité of Paris. In Italy it was the same. The table which he presented at the end of 1884 gave one hundred and fifty-two cases of Porro's operation, with sixty-six recoveries and eighty-six deaths, and was based upon information gathered from eleven different countries and ninety operators.

Premeditated operations upon the ovaries and uterine appendages in a state of disease may be regarded as next in order

of execution, the discussion of the first of which by surgical writers began in the seventeenth century, so far as related to the effects to be accomplished by such operations. Fifty years later the possibility of performing the operations was admitted, and, with many qualifying conditions, the attempt was recommended. The continued discussion of the subject, with the gradual advancement in knowledge, led in 1809 to the successful practice of operations based upon correct diagnosis and intelligent methods of procedure.

The operation for the removal of the healthy ovaries of women—an operation greatly vaunted in these recent days, and performed, in my opinion, with the exhibition of much reckless ignorance and lack of judgment—has descended from the Middle Ages and even more remote periods, in which it was employed upon young girls for the purpose of preventing the propagation of hereditary diseases and deformities and for maintaining the supply of barren prostitutes.

With the brilliant results achieved in ovariectomy, as reflected in the gradual but positive reduction of the rate of mortality and the vastly improved methods of operation, you are all familiar.

Within a few years, morbid conditions of the Fallopian tubes have been classified, their pathological relations determined, their diagnostic symptoms defined, and their treatment by surgical procedures established. Enlargement of these organs

may be cystic in character, forming as it were retention-cysts, containing simple fluid, blood, or menstrual fluid. The contents may be purulent in character, the result of specific or non-specific inflammatory action. Papillomatous or fibrous growths may be deposited in their walls, causing enlargement; and, finally, the products of conception may find lodgment within these cavities, producing the several varieties of tubal pregnancy. Of these various conditions involving the Fallopian tubes, the latter, tubal pregnancy, has for a long period attracted the attention and commanded the careful study of surgeons and obstetricians, with the result of establishing as the best and safest practice removal of the tube and its contents by abdominal section as soon as the condition has been determined by careful examination to exist.

The extirpation of solid growths of the tubes may be required in cases in which their large size gives rise to symptoms of pressure upon important structures.

Within a very recent period much attention has been bestowed upon the subject of the different forms of salpingitis,—inflammatory conditions of the tubes. In a recent communication upon the etiology, pathology, and classification of salpingitis, Dr. Sãnger, of Leipsic, presented as the result of his investigations a very complete classification of this affection, based upon the theories of infection by micro-organisms. The study of diagnos-

tic symptoms and of methods of physical exploration has led in many instances to recognition of these conditions, and justified the extirpation by abdominal section as a means of treatment. In this connection it is interesting to note that Sir Spencer Wells states, in his work issued in 1885, that he had up to that time met with but four examples in which the disease of the Fallopian tubes was sufficient to justify their removal; and, moreover, "that he had never seen anything supporting the opinion that disease of the Fallopian tubes occurs with anything approaching the extraordinary frequency with which, by some, it is alleged to occur."

Tumors of the round ligaments, fibroid in character, have been in a few instances diagnosticated and submitted to successful treatment by laparotomy.

Up to a period of twenty years ago, operations for the removal of fibroid tumors of the uterus were rarely designedly performed. As a rule, the surgeon was confronted with these growths as the result of a mistaken diagnosis, and the operation was more frequently abandoned than completed. Such operations, however, gave knowledge and encouraged premeditated efforts, until they have become in a measure established as a justifiable surgical procedure. Unfortunately, so great has been the mortality that, at this time, some hesitation exists in the minds of surgeons with regard to its performance except in the most favorable cases.

Without doubt, many patients, the subjects of uterine myomata, are permitted to drag out a weary existence of discomfort and suffering for want of surgical interference. On the other hand, some have been hurried to an untimely end through such interference. A careful study of the results of operations, Schroeder states, leads to the conclusion "that, while ovariectomy may now be looked upon, except as regards possible advance in minute details, as a closed chapter, myomectomy, on the contrary, stands exactly in the opposite position."

Leaving the consideration of the female organs of generation contained within the pelvic cavity which have been subjected to operation by abdominal section, we pass through this gateway into the general cavity. Here we find the most brilliant achievements of modern surgery accomplished under the protecting ægis of antiseptic methods. It is quite true that some of the initial operations were performed before the era of asepsis; but they were very rare, and performed usually through errors in diagnosis.

In the order of time, operations for removal of the spleen follow those of the ovary, the first premeditated operation dating from 1826. Three conditions have been described by observers as indicating surgical interference:

1. A change in the normal position of the organ, giving rise to the movable or wandering spleen.

2. The organ in a state of hypertrophy, due usually to malarial influences, forming the ague-cake so well known in certain sections of our country.

3. Cystic degeneration, associated, as a rule, with leukæmia.

Of these varieties the first and second are most amenable to successful treatment by laparotomy, while operations in cases of the third form—the leukæmic spleen—have been followed almost universally by fatal results. The explanation of this is to be found in the condition of the blood, and not in inherent difficulties in the operation itself. Further investigations are necessary to determine the relation between leukæmia and the cystic degeneration of the spleen, in order to avoid, if possible, by preliminary constitutional treatment, the fatal results attending surgical interference.

Of thirty cases of splenectomy reported by Credé up to 1881, twenty-one died. Of the twenty-one cases sixteen were leukæmic, and in all death followed. In the nine successful cases of removal of the spleen, four were hypertrophied, two movable, two cystic, and one normal and free in an abscess of the peritoneum.

In a very able paper read before the American Surgical Association at its meeting in April, 1885, Dr. S. W. Gross reported two hundred and thirty-three cases of extirpation of the kidney, with a mortality of 44.63 per cent. Of these cases of extirpation, one hundred and eleven

were by the lumbar incision, with a mortality of 36.93 per cent., and one hundred and twenty were by the ventral incision, with a mortality of 50.83 per cent. With this statement he proceeds in his paper to discuss the causes of death after nephrectomy by the two methods, presents in systematic manner the various lesions which have been treated by operation, with the percentages of mortality in each, classifies the operations, and concludes with the formulation of certain propositions for discussion based upon the analysis and careful study of the cases collated. These propositions are so complete that they may be said to present in a concise manner the rise and progress of the surgery of the kidney up to the date at which they were presented, and at the same time to furnish a guide to the performance of operations upon that organ.

Since the presentation of this paper in April, 1885, Dr. Gross has added, up to this date, one hundred and three cases to those reported at that time, and has kindly placed at my disposal the following information derived from their analysis and study. In the three hundred and thirty-four cases there were two hundred and six recoveries and one hundred and twenty-eight deaths, giving a mortality of 38.32 per cent. In one hundred and seventy-six of these cases the operation was performed by ventral incision, with ninety-five recoveries and eighty-one deaths, giving a mortality of forty-six per cent. In one

hundred and fifty-eight cases the operation was done by lumbar incision, with one hundred and eleven recoveries and forty-seven deaths, a mortality of thirty per cent. The results obtained in the one hundred and three additional cases give a decreased general mortality of 6.31 per cent.,—a decreased mortality for ventral operations of 4.83 per cent., and a decreased mortality for lumbar operations of 6.93 per cent. These results show that the death-rate has been decreased by the increased experience of the operators. He further states that the new cases add confirmatory evidence of the correctness of the conclusions stated in his paper above referred to, and which are accepted by all writers on the subject.

When it is remembered that up to twenty years ago premeditated operations upon the kidney were not considered, and that the tapping of renal cysts and abscesses was performed usually without knowledge of the organ involved until—possibly in abscess—the presence of a renal calculus disclosed the fact, and when we further reflect that up to that time all renal tumors removed by abdominal section were so done through error of diagnosis, we cannot but express surprise at the rapid development of the surgery of this organ.

The traditional dread of the results following the infliction of injury upon the peritoneum found its fullest exemplification in the treatment, in days gone by, of

the liver, and thus it was always considered necessary to shut off the abdominal cavity by the formation of adhesions between the liver or gall-bladder, prior to tapping, in cases of cysts or abscesses of the former, and dropsy (when recognized) of the latter. This was done by carrying the incision to the peritoneum and packing the wound so as to excite inflammatory action. Later, tapping was performed without the danger of the passage of any of the contents of cyst or abscess into the abdomen. In abscess of the organ, especially if superficial, these adhesions are usually formed, and tapping or incision is rendered safe. In the treatment of hydatid cysts, at this day, it is regarded desirable to form adhesions between the liver and abdominal walls by packing the wound with iodoform gauze, and, if the cyst is deeply situated, dividing the hepatic tissue with the Paquelin cautery.

Wounds of the liver—punctured, lacerated, or gunshot—are chiefly dangerous by reason of the great difficulty presented in controlling hemorrhage in parenchymatous tissues. Abdominal section may in such cases be performed, catgut sutures introduced, and the Paquelin cautery or the aseptic tampon of iodoform gauze used, as advised by Dr. N. Senn. In cases of extensive subcutaneous lacerations or rupture of the liver, it occurs to me to suggest that temporary compression of the hepatic artery and portal vein, by means of long-handled padded forceps carried through

the abdominal wound, may be of service in controlling hemorrhage.

Operations upon the gall-bladder had their beginning through errors in diagnosis, the distended sac being mistaken for an abscess or cyst of the liver, and being opened by tapping and incision. Some of these operations were reported as early as 1733, in which gall-stones were removed through the fistulæ. In 1867, Dr. John S. Bobbs, the brother-in-law of the distinguished Simon Cameron, of this State, performed an exploratory laparotomy, opened a distended gall-bladder, removed fifty gall-stones, sutured the incision in the sac, and closed the abdominal wound. The operation was followed by recovery of the patient,—the first operation in which cholestotomy was performed without the formation of a biliary fistula. In 1878, Dr. Marion Sims, then residing in London, performed likewise an exploratory laparotomy, incised a distended gall-bladder, and removed twenty-four ounces of fluid and sixty-six stones; the walls of the cyst were retrenched and attached to the abdominal wound, forming a biliary fistula. Sixteen stones were found in the gall-bladder at the autopsy, which was held nine days after the operation. Although biliary fistulæ had followed simple tapping and incision of distended gall-bladders, yet this was the first premeditated operation of the kind. The first operation performed with design was that of Kocher, of Berne, Switzerland,—cholecystotomy, with the

formation of a fistula,—in 1878. Excision of the gall-bladder (cholecystectomy) was first performed by Langenbuch, of Berlin, in 1882. The formation of a new communication between the gall-bladder and the duodenum (duodeno-cholecystotomy), or between the gall-bladder and the transverse colon, as practised by Winiwarter in 1882, may be performed, as its feasibility has been demonstrated by the operation of Winiwarter and confirmed by Dr. Gaston, of Atlanta, Georgia, through experiments upon dogs.

The indications for operations upon the gall-bladder by abdominal section have been well established.

Dr. Ohage, of St. Paul, Minnesota, reports in a recent paper (*Medical News*, February 19 and 26) fifty cases of cholecystotomy, with formation of fistulæ, up to date, with thirty-nine recoveries and eleven deaths,—a mortality of twenty-two per cent.; five cases of cholecystotomy without biliary fistulæ, three recoveries and two deaths,—a mortality of forty per cent.; and nine cases of cholecystectomy, with eight recoveries and one death,—a mortality of eleven per cent. In his tables Dr. Ohage has omitted (I do not know whether intentionally or not) the case of cholecystotomy performed by Dr. Keen and reported to this Academy about two years since, and the case of cholecystectomy performed incidentally by Dr. S. W. Gross when operating by ventral incision for extirpation of a tumor of the kidney.

It is not within the scope of this paper to discuss the question, now attracting the attention of surgeons, with regard to the relative merits of the two operations, cholecystotomy and cholecystectomy. It may be said that the decision of the question in the future will undoubtedly be influenced by the consideration of physiological relations and pathological conditions as well as by the results of operations.

Up to this period, the only pathological conditions of the pancreas which have been subjected to surgical treatment have been cysts due to obstruction of the duct. Of these a few cases have been reported, —one by Dr. Bozeman, in which a cystic tumor of the pancreas containing twenty pints of fluid was removed, abdominal section having been performed in the expectation of finding an ovarian cyst. The pedicle, an inch in length, was ligatured, and then divided. The patient made a successful recovery. Simple tapping and tapping and drainage, with suture of the cyst to the abdominal wall, have been performed in other cases with successful results. Carcinoma of the pancreas occurs possibly more frequently than cystic degeneration, and is not regarded at this time as amenable to treatment by surgical procedure, owing to the implication, as a rule, of important adjacent structures and the difficulties to be encountered in dealing with hemorrhage from the large blood-vessels which are in intimate relation with the organ. As Dr. Senn correctly states

in his address in surgery delivered May, 1886, before the American Medical Association, the surgery of the pancreas belongs to the future. He, of all others, has contributed most to clear the way for this advance through the elaborate and extended experimental investigations conducted upon animals, the conclusions deduced therefrom having been presented in his very able paper read before the American Surgical Association in April, 1886.

Of all the operations performed upon the abdominal cavity, it may be correctly said that none exceed in brilliant achievements those performed upon the stomach and intestinal tract. The recital of the successful results obtained in the few reported cases of incised and gunshot wounds of the intestines treated through laparotomy is sufficient proof of this statement. In so short a period has this great advance been made that we may almost count the time by months. In contemplating this subject, who can avoid reflecting upon the great results which will follow in the treatment of gunshot wounds of the abdomen when, in the future, armies come in conflict, and to what an extent the surgical history of our late war would have been changed?

The fistula which followed the gunshot-wound of the stomach in the case of Alexis St. Martin demonstrated the feasibility of accomplishing the same result by operation, and gastrostomy has become an

accepted operation in cases of stenosis of the œsophagus. Gastrotomy, or incision of the stomach, has been performed for the purpose of removing foreign bodies from the organ. Professor Loretta, of Bologna, Italy, has performed gastrotomy for the purpose of overcoming by forcible digital dilatation stenosis of both the cardiac and the pyloric orifice. Success has followed these attempts.

Perforating ulcer of the stomach has been successfully treated by excision, and gastrectomy is advised in such cases.

The successful results achieved by Billroth in his cases of excision of the pylorus (pylorectomy) for malignant disease have proved not only the feasibility but also the justifiability of the operation, when performed in the early stage of the disease. In cases in which pylorectomy is not possible by reason of the extent of the disease, temporary relief may be afforded by the formation of a communication between the stomach and upper portion of the duodenum or jejunum,—gastro-enterostomy.

Operations upon the duodenum and jejunum, having in view the formation of permanent fistulæ for the direct introduction of food into the intestine, have been performed, and have been justly characterized as unnecessary and unjustifiable.

Beginning with the early operations of Littré and Amussat upon the colon for obstruction (colotomy), and ending with the latest suggestion for the employment

of laparotomy in treating pathological conditions of the intestines,—resection in cases of perforation due to ulceration of Peyer's patches in typhoid fever,—we find that the field of operation has expanded so as to include a number formerly regarded as beyond the resources of surgical art. These embrace, as recorded by Dr. Senn, subcutaneous laceration of the intestines, intestinal obstruction due to intussusception, to enteroliths, to non-malignant cicatricial stenosis, volvulus, torsion, internal hernia, and strangulation by cicatricial bands.

Enterectomy, or excision of a portion of the intestine, has been performed in a number of instances, with the most remarkable success, for gangrene, wounds, and other pathological conditions. Koerberle's extraordinary case, familiar to you all, in which six feet of the intestine were removed, indicates to what extent enterectomy may be successfully performed.

In passing judgment upon the suggestion of resection in intestinal perforation in typhoid fever, we must remember that many of the operations upon the abdominal cavity now regarded as legitimate and firmly established were a few years back regarded as equally impracticable, if not absurd.

To complete the list of conditions amenable to treatment by abdominal section, it is necessary to add to those stated above tumors of the omentum, tumors of the mesentery, retroperitoneal tumors, ascites,

acute, tubercular and chronic peritonitis by laparotomy and local treatment, typhlitis and perityphlitis, and rupture of the diaphragm with hernia.

I am not unmindful of the fact that in this somewhat disjointed paper I have given but a faint outline of the marvelous achievements accomplished in the surgery of the abdomen within the past few years. Yet I may hope that some good may follow,—that the time has not been misspent in simply calling attention to the subject. Knowledge upon this subject is daily increasing, facts are being established, and confirmatory evidence adduced. While much has been accomplished, much remains to be done. Time must be given to the more careful study of symptoms, in order that our methods of diagnosis shall be perfected. The limits of diagnostic laparotomy must be narrowed by the acquisition of diagnostic skill.

Calm judgment must take the place of blind enthusiasm in the determination of indications for operative interference, and, above all, honesty of purpose must guide the hand of the operator. The severe condemnation of the profession must be placed upon the indiscriminate performance of operations upon the genital organs of hysterical females, as well as upon the proposal to spay all insane women, so that the progress of abdominal surgery shall not be retarded or its good repute tarnished. The morbid desire for notoriety must not be

gratified at the expense of suffering and confiding humanity.

The great advances in surgical art impose upon the surgeon of to-day higher duties and greater responsibilities. A few years ago he could, with undisturbed conscience and calm mind, watch with folded arms the progress to the end, of certain conditions with which to-day he must deal, not too soon, nor yet—equally, if not more important—too late, under the guidance of sound judgment, and with the knowledge which increasing experience and careful investigations have so liberally provided.